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ITALIAN AND FRENCH ARTICLES ON REPORTING HANDWRITING ANALYSIS

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## F O R E W O R D

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ITALIAN AND FRENCH ARTICLES ON REPORTING HANDWRITING ANALYSIS

[Following are translations of five articles on this subject which appeared in an unspecified issue of Criminologia (Criminology), probably published in Rome, in 1959.]

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HANDWRITING ANALYSIS REPORTING -- AN INQUIRY  
(by Pietro Fredas, pages 119-128)

After my long experience in those penal cases which involve handwriting analyses and which at times have been tragicomic, I have felt impelled to take up this problem. For this purpose, I have sought the aid of several excellent magistrates and illustrious attorneys, inasmuch as their daily experience has qualified them better than others to give decisive opinions on this serious drawback which often jeopardizes the freedom and honor of many citizens who are unjustly accused. The negative results of such analyses have aroused such general indignation, especially among magistrates, that it is extremely urgent to adopt a reform to solve this problem at its very root.

I could have written a long, documented article on handwriting analysis reporting as it is practised these days in Italy, but I purposely chose to present a questionnaire for consideration by a number of excellent judges in the hope that our well-informed legislators will, on reading their replies, concern themselves sufficiently to give serious attention as soon as possible to the matter, so that dreadful miscarriages of justice may be prevented.

I refer now briefly to a case in Milan in 1950 in which I was involved and in which the summary inquiry was entrusted to the late Dr. Cicco of the Public Prosecutor's Office, who, all things considered, was alarmed by it. It was a court action against two persons, named Peroni and Dell'Acqua. Peroni, a resident of Brescia, had issued several bills of exchange, falsely affixing the signature of Dell'Acqua of Milan to them. Two of these bills of exchange were protested in Milan, and when they were presented to the presumed emitter, he declared that the signature was not his.

Dr. Cicco appointed a handwriting expert of Milan, a professor of calligraphy. The latter, despite the protests of the accused Dell'Acqua -- who was my client -- as well as my own protests (I remarked that it was absurd to think that Dell'Acqua had falsified his own handwriting), came to the conclusion that Dell'Acqua was the person guilty of falsifying the bills of exchange. But by good fortune, the handwriting analysis done by a more intelligent expert at the Public Prosecutor's Office in Brescia showed that it was Peroni who had falsified the signature. The latter then confessed his guilt and Dell'Acqua was acquitted.

Thus the necessity for a reform is quite evident.

The questionnaire I submitted to the magistrates and attorneys was as follows:

"In England and other countries, there are scientific laboratories which, through the use of rays, photographic equipment, and other mechanical as well as chemical means, ensure a seriousness in the work and conclusions of the handwriting experts."

"In Italy, however, handwriting experts registered with the courts are usually professors of drawing or of calligraphy and have no specific or deep technical-scientific knowledge of the subject.

"Do you feel that it is necessary to institute specialized training courses in Italy for those professors who are capable of using the methods offered by modern technology and science?

"Do you feel that technical-scientific laboratories should be set up in our universities to perform such duties as may be required either by the judicial authorities or the defense attorneys?

"Lastly, have you in your daily practice of the law had occasion to observe gross errors committed by the handwriting experts who attributed to persons other than the guilty ones the falsification of a particular writing, document, or deed?"

The following are the replies received to this questionnaire:

1. From Dr Giovanni Ghirardi, Procurator General of the Milan Court of Appeals:

"A great many handwriting analyses made today are done on the basis of criteria which are absolutely empirical. It is thus truly useful and moreover necessary to establish specialized courses and technical-scientific laboratories in the universities so that the duty of performing handwriting analyses can be entrusted by the judge solely to those experts who will successfully have taken such courses or attended the proposed university laboratories."

2. From Dr Leonardo Loguercio, president of a section of the Milan Court of Appeals and of the Summary Trial Section:

"The problem of the probative value of the handwriting analyses usually done by professors of calligraphy or drawing is related to the far greater problem of scientific analyses which are not infrequently entrusted, especially in smaller towns, to persons lacking profundity and special technical training.

"This evil is of long standing. There was a time, alas too far back in the past, when an effort was made to avoid the deplorable and sad consequences of this evil. There was a discussion of how to introduce into penal procedure the principle of 'the official nature of analysis,' by which was not meant that the judge should officially appoint the expert but, as it was defined by the great jurist, Vincenzo Lanza, that the handwriting analysis entrusted to specialized technicians both with regard to compilation and review of data, should be completely integrated in the verdict of the judge. In justification of having it mandatory that the expert's conclusions be thus integrated, it was pointed out that, since such conclusions were reached through a scientific examination, there was no reason whatsoever for their being subject to the discretion of a person who has no knowledge of the complex of technical elements which determine their accuracy and adherence to truth.

"Under such a system, the expert must not merely give a simple technical opinion but a true decision -- one that is judicial and definitive -- regarding the disputed fact.

"But whereas this system was favored by the most qualified and active scientific circles in our country (the Humanists and the Positivists), it still could not be incorporated as part of codified law, because of the objection raised that besides being a recurrent danger to legal evidence, the system constituted an unjustified infringement on the freedom of judgment of the magistrate. Thus it was that in the new code of judicial procedure, there was a solemn confirmation of the old principle of the judge being the peritus peritorum [expert above other experts?] and of the handwriting expert as a mere auxiliary person whose judgment is not and cannot be binding in any way. The expert's function, believed by some persons to consist solely of providing a technical evaluation of the handwriting or of seeking the rules of past experience for the judge's consideration, is transformed by others into a pure contribution to the evaluation of evidence and is, in this latter sense, assumed as deriving from the entire teaching of jurisprudence.

"The rather unedifying result of such reasoning is that analysis, at times of high scientific value, are discussed during the hearing by persons who have no special or adequate technical training and whose argumentation has the implicit effect of vulgarizing and distorting the expert's reasoning to suit their own interest in the trial, while the eventual and contingent use of the analysis in the logical process of forming a judgment has devolved upon the prudential judgment of the magistrate.

"This is not the place for a deep, searching critique of the present court system. These brief observations are made solely to show that as long as the system remains the same, i.e., as long as it is possible to attack the analysis freely in an effort -- scarcely concealed -- to bring grist to one's own mill even when the subject dealt with is outside the range of one's normal knowledge or is but vaguely understood, the problem of the choice of a handwriting expert loses its importance and value.

"To attenuate the present confusion, which is not a recent cause of the crisis raging in our court system, only a few remedies can be suggested and these are of limited efficacy.

"Thus it appears that the scientific analyses (including those of handwriting), which are after all the ones of most interest, should not be entrusted -- either because of the high level of technical training required for their preparation or because of the necessity of employing, for purposes of the inquiry, mechanical and chemical means which are extremely costly and sometimes even difficult to find -- to just any person selected perhaps from a professional register, but to suitable collegiate organs which are specialized in such matters. These organs should be located in the universities and receive appropriate recognition and financial aid from the State.

"When handwriting analysis is entrusted to such organs, its utilization will be mandatory for the judge. The litigants will be permitted to have themselves represented in the collegiate organ by technicians who are trustworthy in all aspects of the examination, evaluation, and critique of the elements and facts observed.

"The adoption of these precautions should not of course impede or limit the free, open discussion of the handwriting expert's report, but it is to be hoped that the debate will take place in a higher and calmer atmosphere, with greater seriousness and a greater sense of restraint, when the purpose of the debate will be an elaboration which is no longer an expression of the personal conviction of one or more experts selected according to the free and uncontrolled conviction of the judge, but the expression of a highly qualified technical organ which is located in the universities and has the distinction of being recognized by the State."

3. From Dr Marcello Scardia, Assistant Procurator General of the Rome Court of Appeals:

"It has been evident many times, even during important judicial inquiries, that handwriting analyses requested either officially or by a plaintiff are entrusted to persons with little technical ability in the subject. The problem has rather delicate aspects, especially in those cases where the expert's conclusions constitute a basic element of evidence or to some extent influence notably the conclusions being reached by the judge.

"This drawback is not due to hastiness in the appointment of handwriting experts but rather to the fact that in Italy there are not enough persons highly qualified in this field, so that it becomes necessary to have recourse to those who while not in every instance have had the necessary technical training, are in a better position than others to express their opinion on questions involving handwriting because of studies they pursued privately on the subject or because they are teachers of drawing or calligraphy in the secondary and higher schools. It can be said that except for the Scientific Police Division in Rome, no other institute or agency has technicians qualified by us in this sector, where the common (and often empirical) notions about graphological technique no longer suffice; rather there is a need for a knowledge in depth of physical and chemical phenomena, of mechanics, and of the modern photographic, spectroscopic, and electronic machinery, which is at times complicated, costly, and difficult to use.

"Even sadder considerations confront us when we contemplate the perfected equipment being used abroad for similar technical examinations. Therefore, an examination of the problem by the competent organs is urgent in order to get started toward its speedy and proper solution. This start can be made, within the limitations of the present capabilities, through the establishment of courses of specialization in the universities or even the intermediate higher institutions,

to give students that minimum of concepts which are necessary to assure a serious scientific elaboration in the subject we are discussing here. Only those who will have successfully completed such courses should be entitled to register as handwriting experts on the special court registers and thereby to be entrusted with the function of preparing analyses for public or private agencies.

"The establishment, in universities, of technical-scientific laboratories supplied with adequate equipment and qualified personnel would constitute a sure guarantee both for the magistrate and for those who should want to entrust these laboratories with the solution of their own problems. It is obvious that only specialized personnel can participate in the work of such laboratories, in other words, persons who previously had the training courses already indicated; consequently, the establishment of such laboratories should take place only after the more urgent matter has been attended to of forming the desired courses, on the university or a lower level, which should be entrusted to teachers who are considered to be suited in every way.

"Otherwise, there would be an indefinite perpetuation of the drawbacks so often deplored, namely those of vague, indefinite, ambiguous analyses by handwriting experts, or worse yet, those of pseudo-scientific considerations and conclusions obviously in contrast with the actual outcome, as sometimes has happened and still does in the judicial practice, not indeed through any frivolity of the compiler, but as a logical consequence of insufficient training of men and means, such training being no longer adequate for the technical and scientific progress of the times. Nor is it indeed necessary to emphasize what grave consequences errors of this kind may have for the citizen, errors which the judge is not always able to detect, question, or mend if the means to investigate them are inadequate."

4. From Attorney Giovanni Persico, member of the Bar in Rome:

"I fully agree as to the enormously important effect an officially ordered analysis can have on the situation of an accused person in a trial which has been instituted because of the falsification of a written document.

"I am also in accord with the correct opinion that the special court register of the experienced experts and technical consultants registered in the various colleges does not, as it is constituted nowadays, always offer sufficient guarantees to make it possible to choose persons who are especially qualified to solve the serious practical and juridical problems which can only be properly solved through a scrupulous and accurate analysis.

"For that reason, I am fully in favor of the proposal of setting up, in the law schools of the universities of Italy, courses for technical specialization along with complete scientific laboratories and the use of all the most modern and reliable means of arriving at the truth, insofar as it is possible to do so.

"Only in this way, through the elaboration performed by the expert, will it be possible for the magistrate to arrive at his decision with certainty.

"In fact, when it becomes necessary in a trial to consult an expert regarding a particular point, it means that the results of such examination of that point will have a decisive effect on the settlement of the dispute.

"It is therefore necessary that the experts consulted shall be able to offer the greatest assurance of reliability in their work; otherwise, their aid would turn out to be a veritable harm: having to guide the judgment of the magistrate and therefore be, in a certain sense, arbiters of his will, they practically decide, in one way or another, the outcome of the case."

5. From Dr. Gerasimo Frascino, president of a section in the Venice Court of Appeals:

"I shall reply only too gladly to your questionnaire.

"Unfortunately, the handwriting analyses, which are usually entrusted to professors of drawing or calligraphy, do have incalculable consequences for the accused. It will suffice for me to cite a case which took place when I was in the Public Prosecutor's Office in Padua. A certain person, who had passed himself off as an inspector, had gone to the post office in Cittadella and spent several days making an inspection of all its services. On the last day of the inspection, on taking leave of the director of the office, he had the latter hand over to him the sums which are usually turned over in the provincial post office. It was later discovered that that had not really been an inspector and a few days later, a person was arrested as the presumed impostor, having been identified not only by the post office director but also by other of its employees. An officially ordered handwriting analysis was made of a considerable amount of written matter and the expert concluded that the handwriting in the letters left in the post office by the false inspector was undoubtedly that of the arrested person.

"But despite the two strong kinds of evidence against the accused, I had some doubts, because I was struck by his calm demeanor. Several days later indeed, a person was arrested in Udine for having committed the same type of crimes in that city. He not only confessed those crimes, but also those committed in the Cittadella post office. I should add that the confession was corroborated by the subsequent clarification of many other circumstances.

"As you see, my dear Fredas, both handwriting analyses and the identification of accused persons by witnesses, to which so much importance is often attached, are rather fallacious methods of proof. Thus the technical and scientific laboratories and the courses of specialization would be welcome indeed. In much the same way, the specialization of penal judges would truly be a ray of sunshine."

6. From Dr Gustavo Simonetti, Examining Counsel of the Court of Milan:

"Illustrious Professor,

"Although I am about to leave for a brief vacation in Tuscany, I do not wish to fail to answer your esteemed letter. However, I shall limit myself to several brief observations, since the problem you pose is of maximum interest and would require deep meditation.

"I have the firm conviction that in the analysis of handwriting, it is not enough to study writings by the customary descriptive and comparative methods used by those experts who are usually chosen from the narrow circle of the teachers of drawing and calligraphy.

"In many cases, chemical research is also of basic importance and therefore a chemical expert can be called in to aid the calligraphy expert. But with the progress now being made in the science and technology we are considering here, it would also be indispensable to require the expert to have adequate psychological training which would enable him to examine deeply the personality of the person who did the writing, inasmuch as it is now universally known that certain unmistakable physio-psychic characteristics of the individual are reflected in his handwriting. It is therefore to be hoped that those who wish to dedicate themselves to such studies will have their training based on the three above-mentioned fields of study, and this could well justify the establishment of specialized courses in the universities.

"However, I shall not hide from you the fact that I have little faith in the achievement of this program, not only because -- as everyone knows -- our universities are in difficult straits, but also because, in some inexplicable manner, the scientific orientation of today seems to give an insufficient place to certain disciplines which are nevertheless fundamental for anyone who is engaged in judicial studies. An example of such disciplines is forensic medicine, which, if I am not mistaken, is no longer required in the universities.

"In any case, the initiative you propose is extremely useful, and while I express my certainty that it will not fail to evoke interest among the theoreticians and practical men of law, I dare to hope that in the near future it will serve to convince the responsible circles of the importance of this matter in view of the incalculable consequences which, as you so rightly observe, a handwriting analysis can have for the accused citizen and in general for anyone seeking justice.

7. From Dr Alberto Marucci, Assistant Procurator General in Rome:

"My Dear Professor,

"I reply at once to your questionnaire of the 20th of this month.

"In some towns, we do have very well equipped laboratories both for the examination of documents and for handwriting analysis. In Rome, the new center of the Scientific Police School has, from what I hear, every kind of equipment and specialized personnel. This should be the case elsewhere, both as regards the utilization of certain universities and the establishment of courses of specialization.

"While I have not personally had occasion to witness a case involving erroneous handwriting analyses, I full understand how delicate and difficult the matter is and what the probability is of an error being committed. I therefore believe that in those places where, as in Rome, there exists a studio which is very well equipped for those purposes, it should be utilized far more than it is, both by the judicial authorities and by citizens."

8. From Dr Enzo Salafia, Examining Magistrate in the Court of Milan:

"My Dear Professor,

"I reply most willingly to your request of 20 March 1959, and place at your disposal the very modest contribution of my thinking and experience, in view of the fact that the problem you bring to my attention is one of the most serious among the many which plague the proper administration of justice in our country.

"Its gravity certainly would merit greater attention than that which has thus far been given to it by the competent legislative organs and by those who study judicial problems.

"Handwriting is becoming increasingly important in our juridical circles, in proportion to the increase and importance of economic relations and to the frightful phenomenon of fraud which is becoming more and more characteristic of human relations. Agreements which once were solemnized verbally and by the time-honored handshake are today more often set down in writing because of the distrust which the contractor instinctively feels with regard to the complete fulfillment of the agreement.

"But the stratagem of having agreements in writing does not always achieve the effect of discouraging rash lawsuits, for on the contrary, the diminished sense of decency often induces the contractor who is failing to live up to the agreement to seek all means which will somehow enable him to avoid bearing the consequences of such failure, including the ruse of disclaiming the writings formally attributed to him. Moreover, it often happens that citizens who desire to question the legality of another's patrimony will compose probatory written documents involving certain juridical relationships and use them to achieve their fraudulent aims.

"The convergence of such opposite intentions causes a considerable number of penal lawsuits, in which the judge is posed with the serious problem of the authenticity of the writings around which the controversy centers.

"By instinct and through his avowed inability to arrive otherwise at a solution to the serious problem, the judge has recourse to the assistance of the handwriting expert so as to obtain support for the one thesis or the other; indeed, to be able to decide in one way or another the controversy placed before him.

"Such instinct stems from the deep-rooted and justifiable conviction that writing constitutes an undoubtedly valuable mark of recognition of the personality of man, so that the identification of the personality of the author of the disputed writing assuredly is of considerable aid in resolving the problem.

"But even given the premise that writing is an unmistakable identification mark of a man's personality, can it be said that the instruments now available in Italy to the judge are suitable, or the most suitable, for the solution of the problem? The answer can only be in the negative.

"In fact, when we realize that writing is a product of the subjectivity of man, the result of physical and psychic emotions of man's body and mind, then an inquiry made to identify the author of a writing and carried out with purely objective means cannot help but betray the trust which is customarily placed in the report of the handwriting expert.

"The latter, usually a professor of calligraphy or drawing, has a purely materialistic and esthetic concept of writing; he tends to make a purely objective comparison between the disputed writing and the one being used as a basis of comparison, the authenticity of the latter being held to be unquestionable, either through the acknowledgment of the suspected author of the false writing or through the proper seizure of the writing at the suspect's home on orders of the expert himself or the judge.

"This work of comparison is always serious, especially when the charge is based on the presupposition of a willful alteration of the normal characters of the handwriting by the author of the condemned writing. The investigation, in short, is thus reduced to a series of geometrical comparisons and is at best preceded by a study of the construction of the individual letters, so as to find in them a conviction as to the existence of particular signs of recognition which, if found in the condemned writing as well, are deemed by the expert to be sufficient basic proof for him to make his accusation.

"In my modest opinion, the investigation as to the authenticity or falseness of a writing should be carried out with quite different criteria by men who are quite differently endowed as to training and learning, so that the investigation will bear the kind of dignity which only the scientific exactingness of research can impart to every work of man.

"I shall explain this more clearly. In the first place, it would be necessary to study the personality of the person believed to be the author of a writing he disclaims, and the study of his personality should then enable the expert to determine the morphological characteristics of his writing, which, we repeat, is universally regarded as the material reflection of the individual's personality, impulses, tendencies, state of mind, and state of physical health.

"Once the individual's personality were thus determined and the normal morphological characteristics of his writing ascertained, it would be necessary to begin a deep study of the condemned writing so as to identify, through a process which is the reverse of the preceding one, the physio-psychic personality of the person who penned the writing, and it is only if, through such a reconstruction, one were to succeed in deducing elements of analogy between the suspect's personality and the reconstructed personality of the actual author of the writing that it would be permissible to go on from there to a materialistic comparison of the condemned writings and those being used for comparison; however, the purpose of this would still not be to derive from the comparison the basis of the judgment, but only to derive from it a material element of proof for the soundness of the thesis already resulting from the comparison of the above-mentioned two personalities.

"Certainly, in order to complete investigations of this kind successfully, not only a knowledge of calligraphy and drawing is necessary but also a thorough training in the field of psychology and much experience. I believe it is also indispensable to have the instruments for investigation, the nature and function of which, however, I shall not attempt to define, since I do not have the necessary competence.

"The fact that the investigations effected with the present methods may lead to aberrant results and sometimes, fortunately, to results that are contradicted by an historic verification of the truth is proven by the experience in judicial matters that each of us can have. I personally was present at a case in which a handwriting expert attributed a writing to an accused person and the writing was subsequently acknowledged by the person to whom it had previously been attributed.

"In closing these brief considerations, I wish to stress a danger which would arise if one should seek to obtain more from psychology than it can rightly give us. Thus, in a certain penal trial, I was asked to provide a psychographic analysis for the purpose of identifying the precise feeling which had guided the hand of the writer at the very moment he was penning the writing in question.

"Now, because it is certain that a series of emotional states cause, in the physio-psychic personality of man, various altered attitudes and movements which are analogous and have something in common, i.e., they are made similar by the least common denominator

of the excitation of the nervous centers, it would be risky to ask the psychographic expert to identify, in addition to his determination of the physio-psychic state which had caused the aberration of the writer, the precise feeling which that emotional state had caused (fear, desire, anxiety, etc.).

"I recall that recently in Milan a center of psychographic investigation was opened through the efforts of Professor Marchesan. It would be useful, for purposes of the studies which you intend to make on the matter, to contact him and examine the possibilities of realizing the proposals you have made."

9. From Dr Gennaro di Mischio, Assistant Public Prosecutor in Milan:

"There can be no doubt as to the importance which some penal cases, particularly those involving falsification of documents or attempts of circumvention by an incapable person, acquire at times because of the handwriting or psychographic analyses, since the handwriting analyses tend to point to the material author of a disputed writing whereas the psychographic analyses tend to reconstruct, by means of a writing, the psychic personality of its author.

"In fact, whereas in order to attain such ends, the judge may in certain cases utilize other trial means (testimony, confrontations, direct examination of the subject), the above-mentioned analyses still afford -- and not too infrequently -- a considerable contribution toward the verification of the truth.

"This fact makes it imperative for these analyses to be entrusted to experts who are especially qualified in handwriting and psychology. The two types of investigation, in fact, are generally interrelated, inasmuch as the examination of a writing, even in analyses that are purely graphical, is conclusively substantiated by a psychological appraisal of the writing. This interrelationship applies even more with regard to the second type of analyses, which usually complete the general examination -- psychological or psychiatric -- of the subject.

"Therefore we feel that to carry out verifications of this kind, the purely graphical learning is not enough, as for example the learning possessed by some professors of drawing or calligraphy who are sometimes appointed as experts in penal trials. In fact, it is not unusual for the imperfect scientific training of certain handwriting experts to result in errors and consequences which are highly damaging to the accused citizen, as can be perceived at times in daily judicial practice.

"Aside from pleasantries, which are not lacking even in these matters (the story is told that in a trial, the expert attributed the altered writing to the same hand which had penned another sheet of the dossier in the case, and it turned out to be nothing more than the hand of the examining judge, who had written the missive to request the execution of the analysis), it cannot be denied

that in some cases the work done by the handwriting expert is looked upon with a certain mistrust by the judge, precisely because the method used by the expert has little of the scientific about it.

"Naturally, even in this matter, generalizations would be over-simplified and out of place, for it is only fair to admit that there are some handwriting experts who show they are performing their delicate task exceedingly well. But it would be desirable for all such experts who are on the special registers of the courts to have a more rigorous technical-scientific training, one that is more in keeping with standards of uniformity; such training is, in our opinion, only attainable through the establishment of a school specifically for handwriting experts and of laboratories which are specially equipped and meet the most modern scientific standards, similar to the laboratories now in existence for this purpose in England and other countries.

"Such measures would undoubtedly achieve results which would be particularly useful for the verification of the truth and thereby for the triumph of justice, even in this delicate sphere."

10. From Dr Mario Perucci, magistrate in Ancona:

"I too, in the past several months, have asked myself the same questions you raised. I did so because the handwriting analyses, which at times have so much importance in civil and penal trials, are for the most part carried out by persons who have no title that could give a serious guarantee that they have had proper training in such analysis and who, moreover, appear to be demonstrative and undisputed in their conclusions.

"In particular, I feel that the handwriting expert must have an adequate psychological training and that graphology can, even in the present conditions of uncertainty and gratuitousness, make useful contributions.

"It seems to me that the era of the calligraphic experts can be definitely considered as having waned.

"I now reply to your questions:

a. Regarding courses to be set up, I agree.

b. Regarding laboratories to be established, I agree.

c. Regarding cases within my experience, I can say that this has happened more than once. I have rarely heard of a sentence that was based exclusively on the results of a handwriting analysis. In general, I feel that the expert's opinion may be considered merely as circumstantial evidence, but never, or almost never, as a decisive element of proof."

11. From Dr Generoso Petrella, magistrate in Milan:

"Graphoscopy is not yet a science. (Righi, 'Graphologic Investigation and Calligraphic Analysis,' in Giustizia Penale [Penal Justice], 1957, Volume I, page 154.) For it to become one, the problems of graphic research must be met and resolved on an experimental basis and laws must be formulated to regulate the changes in graphology, the principles whereby the artificiality of a writing may be recognized with certainty.

"In view of this it is not surprising that the experts are lacking such discipline.

"There is even a lack of works that are reliable and are not too vague, out of date, or unacceptable for any reader except those who are completely without any reference works.

"Even those who practice law, the magistrates and lawyers, rarely have concepts that are adequate to evaluate a handwriting analysis.

"In such circumstances, it has happened and still happens that a drawing teacher or a professor of 'fine writing' becomes uncontested as an arbiter in a penal trial (O. Sivieri, L'Indagine Grafica [Graphic Investigation], CEDAM, Padua, page 237).

"The dangers in this state of affairs are all the more evident when one considers that it is difficult for a person, called on to carry out a graphic investigation without having the necessary training for it, to reply hesitatingly to the questions put to him; such a person will not show his own uncertainty, fearing to reveal his inadequacy.

"And it is this consideration, more than any other, which leads one to agree with the opinion of Altavilla and to believe that the handwriting analysis, in most cases, 'is one of the awkward things which debase the intellectual level of judicial inquiry in many countries' (E. Altavilla, Psicologia Giudiziaria [Judicial Psychology], Volume II, page 765).

"The necessity of establishing specialized institutions having adequate technical equipment and personnel able not only to teach but also to experiment will benefit the progress, and above all the seriousness, of justice.

"The proposal advanced by many persons (Sivieri, 'The Problem of the Court Handwriting Experts,' in Giustizia Penale, 1957, Volume I, page 29) to subject all those who seek inclusion on the court registers to a rigorous practical examination might bear fruit, but only if the examiners were chosen cautiously and wisely and if they themselves were truly experts. (The Bourbonic Law No 216 of 25 May 1858 provided for a theoretical and practical examination for judicial calligraphic experts and despite its abrogation, the measure was applied up until very recently in the Naples Court of Appeals.) Nevertheless, the problem would remain unsolved with regard to the multitude of experts whose names crowd the court registers nowadays even though they have no particular experience.

"Examination is not enough. It is necessary above all to provide for the professional training of experts and only afterward should attention be given to the choosing of the most qualified.

"The magistrates charged with penal judicial inquiries have occasion not infrequently to become aware of the insufficient technical training of the experts.

"In the great majority of cases, the expert does nothing more than compare the shape and outer form of certain letters of the writings to be compared, without taking any account of the 'mark,' or rather the specific character of the writing as an organic entity. (Sivieri, 'Pathologic Handwriting and Fraudulent Handwriting,' in Giustizia Penale, 1956, Volume I, page 402.) Never, or almost never, will an expert attain a graphological analysis by making a calligraphic comparison.

"This is a drawback which stems very often from an insufficient compilation of the writings which should serve as a basis for investigations by experts and also sometimes from an incomplete or inexact formulation of the questions. Thus the double inexperience of the expert and the judge contribute toward rendering the evidence all the more uncertain.

"Selecting those experts in graphoscopy who are best suited for the function of judicial experts and providing for their professional training is a duty which must not be procrastinated, particularly in view of the constant increase in crimes against the public trust.

"As long as laboratory-school institutions are not established to provide for this need, the judge, having nothing more than the evidence of the handwriting expert, will have to be courageous enough to follow the instruction of Carrara, who said of experts: 'Their credibility depends not so much on their person or what they say as on the greater or lesser criteria of truth offered by the science or art they profess.' (Carrara, Programma, [Program], general part, page 963.)"

## THE SIGNATURE AND ITS GEOMETRIC PROJECTION -- A NEW PROCESS IN EXPERT ANALYSIS

(pages 129-139; reprinted with permission from  
Revue Internationale de Police Criminelle  
[International Review of Criminal Police], Feb-  
ruary 1959 and written by Paul Brosson, chief  
of the Graphological Service in the Anthropo-  
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tute and expert at the Court of Paris and the  
Courts of the Seine)

An experience of 12 years has shown us that it is difficult to publish an article on graphology without evoking lively polemics among the specialists.

We broach these discussions gladly and even voluntarily, for in the final analysis they cannot help but serve the cause of science.

M. Brosson's exposition is of quite a different kind. It is aimed simultaneously at the technicians when it recommends the "geometric" method of examination and at the non-specialized detective when it constitutes a general survey of the various techniques advocated. As for this dual purpose, it can be said, after all, that vulgarization in this field is just as necessary as a specialization which is far too esoteric.

[Translator's note: the above comments were in italics. The actual text of the article being reproduced follows.]

False signatures represent, among "forgeries," a particular case where expert analysis is especially delicate. In effect, what is involved, by definition, is a very brief text. It is possible to train oneself to make a freehand reproduction of a model of a signature in a way that is quite dangerous. Concerning the imitation of a signature, Professor Emin Gumen (1) wrote: "Everything one man can do can be repeated by another, despite all the difficulties and complications it may involve. The fact must be admitted that there is no signature which cannot be imitated so perfectly that even the most qualified experts will not be able to detect it. For this reason alone, no person can rely on the complexity of his signature or assert that an I.O.U. bearing his signature can be forged without his knowledge. Such perfection is sometimes achieved in forged signatures that even the person concerned is mistaken and thinks the signature is his, without, however, recalling when he signed the paper presented to him."

In his Treatise on Criminal Jurisprudence (2), from which we borrow extensively, Dr Edmond Locard describes various techniques of forging signatures and concealing such forgery. Felix Michaud, notably (3) points out two of these techniques, as follows:

### 1. Slow Imitation (Slavish Imitation)

"Such imitation seems at times to have been well done, at first glance, for the form of the letters is reproduced well. But it can be recognized almost without fail by the imperfections of the writing. Whereas the genuine writer goes rapidly through his signature and especially its flourish, the imitator hesitates. Observation with a microscope or even a magnifying glass discloses a very slight waver which is accentuated in the upward strokes, with the pen covering the model.

"Because of its little width and its position, the wavering of the forger cannot be mistaken for the various waverings which are emotive or pathological in origin and which are catalogued by the experts.

"On the other hand, the variations in the thickness of the stroke (varying from full to thin) are only continuous and harmonious when the movement of the pen is rapid. The only way to avoid this danger is by touching up the line, but then the remedy is worse than the evil, for no retouching remains unnoticed under microscopic examination and its presence, especially when it appears to have been carefully covered up, is particularly a sign of forgery.

"Another feature which reveals a slow imitation is an overly slavish copy of a given signature. It may even happen that the model used for the copy is among the signatures being compared. It is noticed that whereas the latter have various divergences among them, the signature in question is too faithful a copy of one of them. Such an exact coincidence cannot be by chance, and the perfection of the imitation becomes a proof of its falseness."

### 2. Rapid Imitation (Free Imitation)

"The signatures which are imitated rapidly are generally the work of experienced forgers who know the dangers of slow imitation and have trained themselves to trace with a single motion the signature they desire to reproduce. They have a look of spontaneity which makes them appear genuine. Their analysis is sometimes very difficult. The technique to be followed is entirely different from that used for the slow imitation signatures. It consists of finding the constants in the signatures being used for comparison and in trying to find the same constants in the signatures in question."

#### Michaud's Technique of Examination

The analysis of signatures believed to be forged involves a series of operations, which in essence are as follows:

Michaud's technique is the one involving constants. The various characteristics of the signature of a person do not all have the same value for purposes of analysis. For one of them to permit a significant comparison, it must satisfy as much as possible -- and in decreasing order of importance -- the following conditions:

1. It must be constant in the genuine signatures. Everything that is fortuitous or accidental does not count in identification.

But this condition must not be taken literally. For example, it is evident that one will not have to set aside a characteristic merely because it is not found in one of the signatures used for comparison, if such a signature is deformed because of a bad pen or because the paper has been fastened to something -- the latter case happens often in signatures put on receipt stamps. Allowance will also have to be made for a possible change in the signature with the passage of time, when signatures to be compared are of quite different dates. Then too there is the possible effect of a pathological or emotive influence.

If it is desired that this condition of constancy enable a close, conclusive discussion, there must be a large number of given signatures for comparison, signatures written under very varying conditions.

2. It must be relatively invisible. A forger will first imitate what is most apparent in a signature. Contrarily, he omits certain details which at first glance are imperceptible, certain nuances which are scarcely visible but which, satisfying the condition of constancy, disclose the most secret and intimate facets of the graphic personality.

3. It must be difficult to imitate, so that, even if it is perceived by an exceptionally observant forger, it still can evade imitation because of the difficulty it presents.

Thus we see that a graphic characteristic can be used to advantage in an analysis if it has the three qualities of constancy in the natural writing, being scarcely visible, and being difficult to imitate.

Once even a few characteristics are found which satisfy these conditions and their study results in convergent conclusions, the truth is then discovered, regardless of the results of the comparison of characteristics which are of less value because they are too variable, too visible, or too easy to imitate. The following characteristics are especially significant:

1. The alignments. A primary characteristic of value for analysis of signatures is alignment, or alignments. There are in effect two of these: the lower alignment, which is the line at the base of the letters; and the upper alignment, which is the line including all the tops of the letters.

The alignments are often quite invariable in signatures. Few forgers notice them, because they only are evident to a practised eye. To see them, the signature must be examined not from the front but, so to speak, in profile, by placing the eye almost on the level of the sheet of paper and looking sideways and obliquely. One can then perceive better the variations in the position and height of the various letters and the various parts of each letter. One can even trace the alignments on a model made, if one so desires, on a photographic enlargement.

The alignments are extremely difficult to imitate. The true signer has them in his hand, in a manner of speaking, but the person who wants to reproduce them is badly guided by his eye, which hardly can see them.

2. The nature of the writing. There are other constants in the writing itself, considered apart from the shape of the letters. The variation in thickness and thinness, the graphic nuances which result from the habitual variations in speed and pressure are persistent characteristics which are relatively invisible and are above all difficult to imitate.

One will therefore give careful attention under the microscope to the varying width and the greater or lesser rapidity of such variation.

Also to be studied carefully are the starting points for the strokes. The beginning of a stroke frequently presents highly descriptive characteristics. Sometimes the end is rounded and becomes thinner away from the end and other times it is just the opposite, a point; then too, one often finds a hook which, because of its shape and direction, constitutes a particularly valuable sign for identification purposes. A microscope is indispensable for the observation of these characteristics, which are always very slight and at times are nothing more than traces, but which are for that very reason all the more revealing. When they are found in a contested signature, it is almost certain to be genuine.

3. The ebb and flow. Occasionally one may come across important singularities, such as that constituted by the ebb and flow.

This phenomenon is produced when certain fountain pens are used which have a somewhat weak flow of ink. It is due to variations in speed and pressure. When the movement of the pen is rapid or the pressure is weak, the ink imparts a relatively clear shade. But if the speed of the writing slows down or if the pressure increases, the stroke gains in thickness. The ink flows back toward the less covered regions and tends to make the shade of the writing uniform, but it stops sharp at the point where the writing has already dried.

The fact that certain kinds of fountain pens are used in writing is a necessary condition for the phenomenon to occur. But that is not the only condition; it is also necessary for the writer to use variations in speed or pressure at the right moments and to the proper

degree. Take for example a fountain pen which, in the hands of its owner, emits ebbs and flows with a certain frequency and at certain points in the writing. When that same pen is placed in the hands of another person, then either the phenomenon will no longer occur, or if it does, it will inevitably do so with a different frequency and in other points of the writing.

Imitating the ebb and flow exactly is something that can be considered as practically impossible.

When a contested signature presents the same ebb and flow as the signatures of comparison, it is assuredly genuine.

4. The laws of succession of graphic movements. The action of a person in writing his signature consists of a succession of movements which by habit are linked to one another, so that instead of being independent, each of them is influenced by those which precede and helps to determine those which follow. The result is that certain variations are interrelated by laws which are complex but which often have a curious constancy. Consider, for example, that the different variations in dimension in the writing of a single person are not two figures that are similar, in the geometric sense of the word. The signature of a person does not have the same elasticity in all its points; certain dimensions of certain letters resist elongation or contraction; while on the other hand, there are weak points, for example certain links, which vary more readily in size.

The importance of these observations is evident, yet they are almost never grasped by the forger, because they correspond, more often than not, to nuances which are scarcely visible.

There are also laws linking the variations in dimensions and pressure. Thus, we find that a stronger stroke conditions larger letters, that a link gets thinner in proportion to the space between the two letters it is joining, etc.

But the study of the laws of succession of graphic movements is not complete unless one important factor has been brought out, namely the speed of the writing, which has much influence.

A signature which is written rapidly is distinct from one written slowly because of modifications which all tend to simplify the writing and make it easier, such as the complete or partial suppression of certain letters, links which make it unnecessary to raise the pen, points and accent marks placed ahead of their normal position in the writing, a greater homogeneity in the movement and in the intimate nature of the writing, etc.

These modifications are general, but do not appear in the same order or with the same intensity for all writers, as the speed of the writing is increased. Moreover, they are accompanied by other modifications which are peculiar to each person.

These then are many facts which are rarely noticed by forgers. One frequently sees, for example, imitations which have partly been copied on the pattern of a slowly written model and partly on the

pattern of a rapidly written model. Studied bit by bit, such a signature, when contested, could pass for a genuine one, but the whole signature presents an incongruity which gives away the forgery.

5. General characteristics. By the general characteristics, or the graphic dominant, of a writing is meant a set of characteristics which make it possible to define the writing as belonging to a specific graphic type. These characteristics -- discovered by graphologists, who have classified them into classes, types, and modes -- have a tendency to co-exist. When one is found, it is possible to find the others. A regressive writing remains regressive. It can happen that the manifestations of the regression change; for the uninitiated person, the writing seems completely changed, but for the experienced expert, it has remained the same type.

Most of the general characteristics are also persistent in being able to present a fundamental whole which reflects the temperament of the writer (4).

With regard to the analysis of signatures, the consideration of the general characteristics sometimes leads to graphic incompatibilities which by themselves are sufficient evidences of forgery. If, for example, the signatures used for comparison are quite rough and the signature in question has subtle variations in heavy and light strokes, that is a serious indication of forgery. The same is true when one finds regressive tendencies if the true writing is progressive, etc.

In very difficult cases, when the signature being analyzed is very variable or very short, the graphic dominants are the sole guide to the truth.

The same holds true when no signature is available for comparison, but only a specimen of the writing of the apparent author of the signature.

6. Secondary characteristics. Let us now consider those characters which are constant in the signatures used for comparison but which are all too obvious to escape the eye of the forger and which are easy to imitate. These are secondary characters, such as the general pattern of the letters, the orientation of the signature, its position with regard to the text preceding it, etc.

It is through an examination of these characteristics that one should round out an analysis. They should not be used to support proofs, which have the advantage of being more comprehensible and less technical, and which are, in effect, the conclusions reached through a study of the constant values.

The similarities in secondary characteristics are evidently nothing more than weak arguments regarding authenticity.

The differences must be interpreted with a good deal of caution. If they accompany a lack of identification of constant values, they are complementary proofs of forgery, for this would indicate a poor imitation, one that cannot deceive anyone.

If secondary differences accompany the identification of constant values, they are then complementary signs of authenticity. They should be attributed either to an accident of the pen or to an attempt at dissimulation. A forger who is clever enough to perceive the difficult points of a signature would not have committed the rank error of a divergence that is too visible, for the fraud would be evident at first sight.

#### The Graphometric Method of Examination

In the analysis of signatures, Dr Locard's graphometry makes it possible to analyze and number the variations in the writing.

Those cases in which only a signature is being contested are admittedly very difficult. Undoubtedly a clever, trained forger can reproduce a signature perfectly enough to make a successful analysis almost impossible, whereas in the case of a written text, the graphometric technique gives positive results.

On the other hand, the signatures of semi-illiterates are sometimes so polymorphous that the range of variations can include aberrations which are due to the forger's lack of precision.

Graphometry is only applicable in those cases in which a number of contested signatures and an even greater number of authentic signatures are available.

The formal method of comparison is even more dangerous here than in any other case. The proper method is an analysis of the variations, which is an application of graphometry to a difficult case.

In important cases, one can have recourse to the rather delicate method of the composite photograph (Galton, Persifor Frazer).

Analysis of variations. A study is made of the analytical characteristics of each letter of the contested signature or signatures, and of all the general characteristics of the one or more signatures.

Whenever these observations can be set down in the form of numbers, this is done. The same procedure is followed for the authentic signatures; for this purpose, the results already obtained are arranged in tabular form.

One then verifies whether the numbers obtained for the contested signature are within or outside the range of variation of the authentic signatures.

If the aberration is slight or involves only one or two letters, authenticity is possible, but it is relatively improbable if the aberration places all the letters of the contested signature outside of the range of the table set up.

The same procedure is followed for the heights, the lifting of the pen from the writing, the intersections, the spacings, the starting points for circular letters, the width of gaps in circular

letters, etc. It is quite evident that unless extremely clear-cut, conclusive results are obtained, this method only indicates probabilities.

#### The Composite Photograph

This technique consists in making a single test of a number of signatures which are superimposed on one another so that the common strokes, the essential ones, corroborate one another and so that the aberrant strokes are out of line. This composite test of the authentic signatures is then compared with the contested one or with the composite of a number of contested ones. In one version of this technique (Galton), each signature is placed in succession before a single photographic plate for a fraction of the time necessary for a normal exposure, the fraction being equal to the quotient of the total time divided by the number of signatures in the series. If, for example, one desires to make a composite of ten signatures and the normal exposure time is one minute, each signature will be exposed for 6 seconds. In the second version of this technique (Frazer), each signature is photographed and the negative films are then superimposed on one another, after which a print is made of the whole.

If the signatures vary in size, one can either make enlargements or reductions to make all the signatures of uniform size (Lyon Laboratory) or make them all uniform in length by photographing them at varying distances (Frazer). Lastly, one can, if the variation is too great, work on the signatures letter by letter.

#### The Quadrille Method

The photographing of signatures with a quadrille lens [or on a quadrille print?] is, in numerous cases, the simplest and most efficacious method of illustrating a suspected identity, for in this way, no line is hidden, one can see the divergences as well as the similarities and the signature is not covered, and one can also see the suspect hesitations, the lifting of the pen, and the quality of the writing.

According to Persifor Frazer, there is no valid objection to this method; it is, in effect, nothing more than a method of measuring signatures.

It will be noticed that this method closely resembles that of Lengenbruch, which has been criticized so severely.

#### Geometric Method (P. Brosson Process)

This objective method of expert analysis, which we call the Geometric Projection of Signatures, consists essentially of gathering on tracing paper (millimetered or not), along straight lines, the extreme points of the writing of the signatures to be analyzed.

By way of illustration, the following is an extract of a counter-valuation report, following which the Examining Magistrate asked the first expert to provide further data to complement his report:

[Figures 1 and 2 -- see end of report.]

In the above example, the "projection" of the 34 signatures of comparison and that of the three contested signatures -- all 37 consisting of the letters "S.W." -- produced very characteristic rhombic-shaped figures in their comparative study.

The following two basic observations can be made about the above results:

1. The perpendicular of these rhombic figures appears to be oriented to the right in general;
2. The two halves (left and right) of these figures are either fairly equal or in most cases the left half is greater than the right.

Comparison with the "projected" signatures being contested:

1. Geometric similarities. Only the first contested signature (Q-1) fits the group of regular rhombic figures and is seen again in the comparison;

2. Geometric differences:

a. Q-2 and Q-3, in relation to the rhombic figures of the signatures of comparison, have their perpendicular oriented considerably toward the left.

b. The left half of the rhombic figures of Q-2 and Q-3 is not only much smaller than their right half but is also -- all proportions being considered -- the smallest of all the left halves of the 34 "projected" signatures used for comparison.

c. Q-2 and Q-3, with regard to "projection," show no similarity with the other "projected" signatures used for comparison.

This practical example provides an insight into the possibilities for identification by means of the new process.

It is especially evident that the geometry of the graphic surface thus delimited is already, in itself, sometimes conclusive.

In addition, segmentary examination regarding the position of the lines of division as compared to the vertical and horizontal axes can in various cases serve as a valuable cross-check.

#### The Forger

When it has been established that a contested signature is indeed false, the next question to be answered is the identity of the forger. This is an extremely delicate operation, but one which, according to Felix Michaud in his excellent study on forged signatures (5), is nevertheless not impossible. Dr Edmond Locard has the following to say of this matter (Traite de Criminalistique, [reference 2], page 353):

"In the cases of signatures imitated rapidly, it is possible to discover constants in the writing of the forger, especially if the signatures he made are numerous. Examples of such constants are the ebb and flow characteristic of his writing.

"But it is especially the general characteristics which, when used judicially, can be of use. These characteristics are to be sought in those parts of the signatures where his attentiveness is momentarily lax and he has allowed his own graphic personality to appear.

"If, in the imitation of a progressive writing, a bit of regression appears in the lax moments of the forging, one may then conclude that the forger's writing is regressive. That is a prime graphic indication which appears inevitably in the writing of the guilty person, but which can also incriminate other suspectable persons.

"If the strokes of the writing being imitated are constant in width or even vary from thick to thin without any intermediate width and if, on the other hand, they appear spindle-shaped in the lax moments, one then has the proof that the writing of the forger is normally spindle-shaped. That is yet another graphic indication which interrupts the preceding one in the writing of the guilty person.

"In the easier cases, one can thus discover three or four graphic dominants of the forger. That provides enough of a cross-check to furnish, for lack of definite proof, an interesting indication."

One cannot but subscribe to these conclusions, providing that their implications as to reserving judgment and using caution are heeded.

#### Disguised Signatures

Disguised signatures are encountered only rarely. They would be veritable cases of "auto-forgery." One can however imagine that a writer will deform his signature to be able to disavow it afterwards.

"Forgery and disavowal -- such are the extreme risks presented by signatures," Emin Guven observes in his already cited substantial study.

Felix Michaud has shown how one can expose disguising through the discordance of constants and of secondary characteristics. He proposes the following table. It is evident that the forger runs a greater risk by departing too much from his normal signature, for then he only calls attention to it more readily.

TABLE 1

Constants $\rightarrow$ Identification	Identification	Non-identi- fication	Non-identi- fication
Secondary character- istics $\rightarrow$ Identification	Non-identi- fication	Identification	Non-identi- fication
↓	↓	↓	↓
Signature $\rightarrow$ Authentic	Authentic (but disguised)	False	Crudely false

Authentication of Signatures

Before mentioning the "signing machines," let us return to Professor Guven who, in dealing with the "signs which one can use as a signature," proposes the following solution between the handwritten and mechanical signatures:

"Being very easy to imitate, still easier to deny, very difficult to analyze, and likely to play a very important role in our lives, signatures are extremely dangerous 'signs' for us.

"Given the fact that courts and experts do not always succeed in determining with certainty which signatures are false and which are genuine, we believe it useful to seek other means which can replace signatures with fewer drawbacks. We think first of the stamp.

"A stamp which does not change with time and is independent of the physical, psychological, or pathological state of its owner, is obviously much surer than a signature.

"The objection may be raised that a stamp can be copied, that it can give rise to forgeries. That is not impossible, but it is much more difficult to imitate a stamp, especially if it is engraved by hand. It is very difficult, if not impossible, to imitate a stamp and still adhere to the dimensions and distances of the genuine stamp. Moreover, the analysis of stamps is much easier and more certain than that of signatures. It lends itself better to clear-cut and precise conclusions, providing the stamp is quite visible and a special ink has been used.

"Unfortunately, we see but too often certain official offices use illegible seals which have blurred, worn out letters that are almost undecipherable.

"Fingerprints. The fingerprint has all the advantages of the stamp; moreover, since a finger is an integral part of its owner, there is no need here to fear its loss or theft. For the time being, we do not have to worry about the possibility of a false fingerprint. While some instances of such prints have occurred, they were only in laboratory experiments.

"In the cases of fingerprints as in that of stamps, the signs must be clear, clean, and the lines quite visible."

It is true that fingerprints also have two weak facets: first, the possibility of obtaining a print from an unconscious, drunk, or even dead person, in short, someone who is without consciousness or will; and secondly, there is still the necessity of soiling one's fingers with ink. The latter drawback, however, can be overcome through the use of special ink which has no coloring or grease; it is then sufficient to use special paper to obtain a perfectly black print.

To guard against all these drawbacks, M. Guven proposes the following remedy: "One should use all three of the methods (signature, stamp, and fingerprint) or at least two of them (signature plus either the stamp or fingerprint) for important documents and never be content with a signature alone, especially if it is on a stamp."

We shall end this documented study on the expert analysis of signatures by referring -- still in the domain of a possible identification -- to the graphographic research of Dr Emile Malespine (6), who recommends "a new type of signature on an apparatus as handy as a typewriter and which, by authenticating signatures, thus becomes a new means of identification."

For his part, Marcel le Clerc concludes as follows in his *The Protection of the Banking Document Against Forgery* (7): "The signing machine thus renders services which are undeniable and makes it useless to resort to the illusory defense against forgery by a complicated or illegible signature, enabling us to point out that legibility even protects an accountable document more by permitting first of all its instantaneous verification and then its budgetary control.

"However there is still a major difficulty in numerous countries: the letter of the law appears to be against mechanical signatures. But if we take the very text of the international convention on the use of checks, do we not read: 'The check must contain ...the signature of the person who emits it'? That is all it says. Thus, it is not specified that the signature must be affixed in sight nor is there any specification as to what the method of apposition should be. Is it not true that the amount of the check, which is just as important as the signature, can already be printed automatically? (In France, Article 9 of the Order-in-Council of 30 October 1935 provides that the amount may be inscribed in figures or in letters, and Article 11 of the Decree of 17 November 1941 stipulates that the Administration can authorize drawers of postal checks to write the sums in figures alone, when the inscription of the sum is effected by a mechanical process offering sufficient guarantees of security.) Moreover, when the legislator intends to require a holograph, he takes care to specify that carefully.

"Special paper and the mechanical signature are therefore veritable arms of the banking document against forgery. But in criminal law as in every field, we have the struggle between the shell and the breast-plate. Thus on the one hand it is suitable to educate the public -- both the bankers and the drawers of checks -- while on the other hand, it is useful not to forget the ultimate resources of the laboratories, which, through the use of Wood's light controlled by the measure of the conductibility of banking paper (according to the method described by Messrs Sannie and Pinel), will in the final analysis be able to detect the most diligently made forgery."

The custom of putting a name or a sign at the bottom of a document goes back to the 16th Century. Let us recall that it was an ordinance of 1554 that was promulgated by Henry II which made the signature obligatory for all documents in France. The practice of writing an "x" at the bottom of a document was the origin of the signature. Thus it has been said that the signature was invented by those who were unable to write.

Without being pessimistic, it is fitting to consider that, since the above-mentioned royal ordinance and despite all the progress achieved in the expert analysis of written documents, especially the analysis of signatures, the problem posed does not appear to have been practically resolved.

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HANDWRITING ANALYSIS REPORT BY EMILIO OGGIONI  
(Technician of the Institute of Forensic  
Medicine of Milan University, which is  
under the direction of Professor Dr C. M.  
Cattabeni; pages 140-145)

This report was prepared on the orders of Dr L. Secchi, Examining Magistrate, on 1 June 1957 in the trial against Branca Giancarlo and others.

The Problem: "The expert should determine whether the notations regarding the terms [i.e., costs] indicated on the contract form which appears on sheets 86 and 87 of the trial brief were written at the time the documents were drawn up or at a later time, prior to erasure of the previous writing."

Description of the Documents

These are two printed forms of the Granary Association of Milan used to draw up the terms of contracts and contain handwritten notations.

Their form is the same: the paper is white and smooth; and there are perforations along the top margin which makes it possible to detach these sheets from a pad.

The two documents are seen below as photographic reproductions on a reduced scale (note that millimetered paper is set at the base of sheet 86 [actually the millimetered paper is seen only in Photographs 4 to 6] to help emphasize the data under discussion):

[Photographs 1 and 2 at end of report.]

Premise: General remarks on the original copy of notations written by hand with pencil and on the carbon copies directly made from them.

As is known, the copies obtained through tracing are made by interposing sheets of lightly coated paper, called carbon paper, between the original and the copy.

Carbon papers in commercial use come in various colors and for various uses. The colored coating is obtained through the use of anilines or derivatives with waxes added to them, the latter serving to protect the carbon and to give the surface of the coating a certain hardness and clearness. The pressure of the writing implement forces the coloring underneath the wax against the sheet, on which the imprints are thereby reproduced through a tracing of the original writing. To obtain copies that are uniformly tinted, it is therefore necessary to maintain the same pressure throughout the writing and to employ carbon papers that have not been used too much.

If the carbon paper is new (when two copies plus the original are needed), the color intensity of the second copy is naturally less than that of the first copy.

On the other hand, in those cases where the carbon paper has been used many times for the same pad, it may happen that in areas of the carbon which correspond to the lines where the writing is repeated most often, the carbon has lost much of its colored coating and as a result the imprints on the copies are lighter in comparison with those along other lines.

In addition, it should be noted that the fresh imprints obtained with certain commercial papers readily yield the coloring to the touch, so that if the copies have been handled several times, some of the writing can become rather illegible.

The appearance of pencilled writing depends on the brand and hardness of the pencil itself, on the shape and humidity of the point, on the angle of writing, on the pressure exerted in writing, and on the kind and humidity of the writing support.

But it is possible to distinguish, under the microscope, an original writing in black pencil from another obtained by tracing with carbon paper with black coating. In the first case, the writing shows streaks with silvery reflections that are continuous because of the continued pressing of the point against the writing support, along the line, with interruptions that are more or less frequent according to the pressure, the roughness of the paper, etc. In the second case, however, the imprints produced by tracing are formed by many small opaque granules that are very close to one another.

#### Examination of the Document on Sheet 86

The sheet bears a trace of having been folded crosswise. The horizontal crease is very pronounced and the sheet is thus quite wrinkled along the resulting line. The vertical crease is also quite pronounced, and at the lower part of the crease, the paper is partially torn.

Substantial losses, in the form of tears, appear in the center and in the lower right hand part of the sheet.

Several small tears and traces of folding are seen near the edges of the sheet, particularly to the right and at the bottom (see Photograph 1). At first the surface of the sheet was uniformly white, but the upper part of the lower left-hand quarter of the sheet now appears grayish and looks as if it has been handled repeatedly. In this area, but on the reverse side of the sheet, the surface has the appearance which can be seen in the next photograph (Photograph 3), which is a full-scale reproduction; it appears covered by a dense dotting of adhesive dust particles deposited by the sheet having remained folded for some time in some sort of folder.

Therefore, given the thinness of the document, this grayish, dirty appearance of the one part of the sheet is due solely to the transparency of the paper.

[Photograph 3]

Examination by Wood's light: When the document is exposed to the ultraviolet light produced by a quartz lamp using mercury vapors with Wood's screen, no suspicious fluorescences are observed.

Examination by transmitted light: When the document is examined by placing it against a uniform light, no areas of greater transparency are observed.

Microscopic examination: The line with the notations regarding the terms, which is located halfway down the sheet and along the horizontal line already indicated as a crease, can be seen in its normal size in the following photographic reproduction:

[Photograph 4]

Under the microscope, equipped with stereoscopic lens and light varying in incidence, the surface of the paper in the section occupied by the line in question does not appear to be erased; no raised fibers are to be seen, nor any of the characteristic results of the use of rubber erasers.

The writing here appears as in the imprints obtained by tracing with black coated carbon paper, that is, like so many small, massed opaque granules.

In the enlargement twice the original size, seen next, these granules are quite apparent. A characteristic evidence caused by the irregularity of the point which wrote the original, it is quite apparent in certain imprints of numbers and letters, even to the naked eye.

[Photograph 5]

In the preceding photograph, which was taken directly from an enlargement, the evidence is brought out very clearly.

For example, in the number "235," it is noticeable particularly in the "2" (the downward diagonal stroke) and in the link between the "2" and the "3" (an upward stroke) that the thickness of the imprint is conspicuous, just as it is in the "V" of "Vin," and in the number "266" -- in the "2" and in the sharp turns of the two sixes.

The left-hand edge of these thicknesses is pronounced, whereas the right-hand edge is hazy.

This phenomenon is easily found in other letters or words of the document, but not in all of them, and it is due, as has already been pointed out, to the irregularity of the writing point in contact with the paper.

The color of the imprints is not uniform; small differences in intensity are seen both in the line in question and in others of the document.

### Examination of the Document on Sheet 87

The sheet bears traces of creases that are not too evident -- crosswise, and near both the top and bottom edges.

The surface of the sheet is white in both the top and bottom parts, but much of the center section appears dirty white, as though through repeated touching.

When the document is examined with Wood's light by the use of the lamp already described, no suspicious fluorescences appear.

Also, an examination of the document with transmitted light does not bring out any areas of greater transparency.

The central section (the one that has a widespread dirty white appearance) looks as follows in the next full-scale photograph:

[Photograph 6]

As in the case of the preceding document, the examination under microscope and by light with varying incidence shows no abrasions, raised fibers, or the usual results of gum erasure, on that part of the paper's surface where the notations about terms are written.

Even the writing is similar to that of the preceding document and appears as many small opaque granules that are close to one another. The following photograph, taken directly at a scale of 2 to 1, brings out a number of facets of the line in question:

[Photograph 7]

The granules are visible, while other writing appears barely legible.

The numbers "231" and "266," concerning the terms, appear to have been written with a ballpoint pen and in blue ink; these numbers were rewritten on other imprints of the same numbers.

In fact, in the preceding photograph, the same figures are clearly visible under those written with a ballpoint pen.

The phenomenon due to the irregularity of the writing point, already referred to in the examination of the other document, is repeated in the same manner.

### Recapitulation

The preceding documented report indicates the following facts:

The examinations made of the notations regarding terms on the documents which are the subject of this investigation have not revealed any areas of suspicious fluorescences or areas of greater transparency in the paper, the surface of which has not been found abraded or with raised fibers or the characteristic results of erasures with rubber erasers.

Bearing in mind what has been stated in the premise above, the writings in the contract forms are copies obtained by tracing with black carbon paper (see the microscopic examination results above).

In the document on sheet 86, the notations on terms are located on a line caused by a folding of the sheet and the area where the notations appear has a grayish color, which is due to the transparency of the paper; the latter is covered on the back by a dense dotting of adhesive dust particles deposited as a result of the document having been kept folded for some time in a folder or something like a folder.

In the document on sheet 87, the central section has a dirty white color that is widespread and appears to have been caused by repeated handling, and the writing is scarcely legible.

In this document, the numbers referring to the terms have been retraced with a ballpoint pen, which went over the same numbers already written.

A characteristic evidence which is due to the irregularity of the writing point in contact with the paper is found in certain imprints of numbers and letters in both documents. This evidence points to the fact that the documents were originally written with the same implement.

The specific time of a writing done with black pencil or of imprints made with black carbon paper is not ascertainable.

#### Conclusion

Therefore, my answer to the problem posed is as follows:

"The notations regarding the terms indicated on the contract form which appears on sheets 86 and 87 of the trial brief were written at the time the documents were drawn up."

The Expert,  
Emilio Oggioni  
Technician of the Institute  
of Forensic Medicine,  
Milan University.

## FUGURE APPENDIX

Translator's note: The writing in the photographs in the text are illegible for the most part. However, it may be of use to translate the legible printed words as they appear in Photograph 6, inasmuch as they apply as well to the other photographs.]

### Sampling

Delivery

Date of Removal

Delivery

Place of Removal

### Receipt in Weight and Quality

Terms

per 100 kilograms

### Payment

Cloths bags?

### Brokerage

Uses and Customs, Standards and Regulations of the word illegible of Milan

THE OPINION OF THE GREAT MORTARA ON HANDWRITING ANALYSIS REPORTS

(Pages 146-147; Excerpt from the  
Trattato di Diritto Processuale  
Civile [Treatise on Civil Trial Law]  
by Lodovico Mortara)

When it is desired to verify the authorship of a writing, there is no other way than to examine the external characteristics of the writing; then only can one establish whether it was actually written by the person believed to be or declared to be the author. As I have indicated, the examination which is based on a comparison with other writings must be aided by the opinion of experts (Article 284). It does not appear that the text of the law lends itself to the interpretation -- desired by certain interpreters -- which leaves the decision in the hands of the judge as to whether there is need or not for such technical aid. Other legal codes were more prudent: the Germanic code (which, however, excludes testimonial evidence) entrusts the discernment of the judge with the comparative examination of the condemned writing and the writings used for comparison, as well as with the analysis of the other proofs offered, and authorizes him to employ experts when he deems it necessary (Paragraphs 441 and 442, which are analogous to the Austrian regulations, Paragraphs 314 and 315); and the code of Geneva (Articles 250 and 252), which in addition permits evidence through witnesses. The fact that the aid of calligraphic experts is more often an element of confusion than of useful assistance in the search for truth is too well known to require elaboration. There is no science or art for the comparison and identification of writings, nor are there, consequently, any persons who are particularly devoted to such an art or science. Very often the so-called calligraphic analysis gives the impression, which cannot be overcome, that it is a hoax or part of a conceited imagination camouflaged in the remains of a theory or of an experiment interwoven with errors and illusions.

No doubt each special case can suggest several analytic criteria of direct observation which are apt to give rise to the idea that the disputed fact is either likely or unlikely. But when this is said, honesty does not allow the matter to go any further. The probability or improbability of a disputed fact can most often be discerned by a person who has common sense and normal vision, and this pertains to the judge as well. The trouble is that once an analysis is requested, the law gives a solemn sanction to the authority of such evidence and it is almost inevitable that the expert will believe he must establish the truth rather than the probability; this gives rise to the autosuggestion which transforms the oddest notions into elements of certain and unshakable judgment and often substitutes personal emotion for a calm objectivity in the examination.

However, since there is no science or art that can be applied, it is quite evident that there are not nor cannot be any persons particularly devoted to it, that is, experts in the true sense of the word. In fact, just about anyone is deemed to be capable of making a handwriting analysis, from the schoolteacher, who is illogically thought to have such ability merely because he teaches children penmanship, on down to the accountant, who decorates the account books with his scrawls. Only in a few exceptional cases is an effort made to seek aid outside these modest spheres and the analyses then entrusted to such persons as paleographers, archivists, anthropologists, etc. But not even in the strata of higher learning can one find that which does not exist, namely a divining science and art; consequently, one always has the same results in the end.

The handwriting analyses in the Dreyfus trial should have sufficed to suggest to all legislators the need to abolish the obligatory nature of this means of judicial inquiry and to raise the question whether it would not have been better to prohibit it altogether.

Any person skilled in such matters should in all conscience recognize the fact that what may appear to be perfect identity of writings can be just as deceptive as a clear-cut difference between writings, if indeed one can speak of perfect identity and difference in a field in which, to tell the truth, there are only similarities and dissimilarities. Two hands can write in the same way by chance or through deceit, and the hand of one person can vary the writing because of a thousand reasons due to external or personal influences (the latter kind being at times pathologic, psychic, or merely physical), in such a way as to make it unrecognizable. The comparison of writings should never be in itself a means of verification that is sanctioned in law. Actually, it should only serve along with all the other parts of the inquiry and become a coefficient of judicial certainty, because direct certainty is an unattainable ideal.

It is in this sense that I hope for a revision of our legislative regulations which, in my estimation, result in very bad proof.

PLASTOGRAPHY  
(by Pietro Fredas, pages 148-149)

I have coined this Greek word because it expresses by concept better than any other word. "Plastos" in Greek means "false" or "falsified" while "grafia" means "writing."

I desired to visit the laboratory at the Institute of Forensic Medicine of Milan University and made my wish known to Emilio Oggioni, the technician at the laboratory, who has been engaged in his occupation for 34 years. He is neither a professor of calligraphy nor a professor of cacography. He is a technician who uses scientific means to expose forgeries in documents and writings.

He kindly showed me about the laboratory with all its apparatus and precision instruments. It was thus I learned that the most secure and modern means of exposing the various falsifications -- other than the already mentioned Wood's rays, which are rendering quite valuable services that are photographically documentable -- are infrared rays, which serve to distinguish the various inks through the use of stereoscopic microscopes with high magnifying power, which can be used with light of varying incidence as well as with transmitted light.

There are also measuring microscopes, photographic apparatus of every type, which he uses without any need for photographs (photomicrography).

Of great interest is a movable stage support for the microscopic examination of documents which enables the observer to keep the microscope stationary while moving the support on which the document is placed (his own invention). He also makes use of chemical means, but does so only seldom, preferring physical means so as not to alter the document under observation. He does the dark room work himself so that he can follow closely every least detail with full size photographs. He photographs the document along with millimetered paper because the inspection is then more accurate and efficacious. He follows the school of Professor Edmondo Locard of the Technical Police School of Lyons.

Also noteworthy is his special ability with regard to typewriters, for he has a thorough knowledge of the parts and the various makes. Thus he can study the typing on a document and readily identify which make of typewriter was used.

I asked him the following questions and received the indicated replies:

1. Question: What is the procedure used in examining a writing?

Answer: I use the method suggested by Locard, which consists of looking for the following elements:

a. arrangement of the text -- the beginning and end of the writing on the sheet;

b. margins (regular, winding, etc.);

- c. end of lines: empty spaces, divided words, closing signs;
- d. direction of the lines and of the individual words;
- e. spacing between lines and words;
- f. spacing between the letters of words, and links between letters and groups of letters;
- g. terminal strokes at the end of words;
- h. height of the tall letters;
- i. real or virtual curves;
- j. thickness of the strokes;
- k. obliqueness of the straight strokes and their variation according to the letter (that is, the individual elements which comprise a character, in their order of succession);
- l. involution of the loops (or ovals), with regular notation being made of the attacks;
- m. rotating direction of the loops;
- n. bending: presence of hooks at the base of the straight strokes;
- o. going over, retouching, wobbling, and erasing;
- p. habitual abbreviations;
- q. centralizing and punctuation;
- r. connections between the isolated letters;
- s. "plateau" of the r's and z's -- rectilinear, convex, or concave;
- t. point where the t is crossed;
- u. presence of malformed or bizarre letters, ornamental strokes, errors in spelling.

2. How is an altered document detected?

Such falsifications consist of the modification of a financial or juridical value at one or more points in an original document and can be effected in the following ways:

- a. through an erasure by means of gum erasers or sharpened erasers;
- b. through chemical washing;
- c. through superposition;
- d. through interlining.

In the first of these types of alteration, when the document is placed under Wood's light, one observes a reaction of varying fluorescence in the abraded area that can be documented with photographs. Microscopic examination of the suspect area with a grazing light shows the raised and broken fibers on the paper's surface and also a certain amount of opaqueness. Under transmitted light, a greater transparency in the abraded area becomes evident. The microscopic proofs can be documented by means of photomicrography.

There is another method that can be used to advantage, one that is usually used for the detection of latent fingerprints. It consists of exposing the surface of the document to iodine vapors.

in the nascent state, which color the abrased areas brown. I should add here that in some cases, Wood's light makes it possible to read the letters erased.

In the second case, whether common chlorides (ink remover) or a washing by chemical substances was involved, the alteration can be detected with Wood's light, and if it was done recently, it is possible to identify the washing substance with appropriate reagents.

In the third case, microscopic examination with a grazing light is generally sufficient to bring out the superimposed strokes. In doubtful cases, that is, when the crossings at the suspect points appear to have similar shading and consequently being difficult to differentiate by optical examination, it is highly recommended to use infrared photography with the appropriate technique. For this purpose, it is useful to recall that infrared photography makes it possible to read words underlying erasures or blots, when the ingredients of the ink of the writing are different from the ink which caused the blot. It may also be useful to make an examination with Wood's light.

In the fourth case, one makes a graphic examination of the phrase or word that was interlined and then compares it with the writing of the text. It is very important to detect the inevitable presence of Michaud's sign, i.e., the "by-pass reflex," which takes into account the way in which the crossings occur between the tall letters of the interlined phrase and the original text. In this case as well, one uses Wood's light and infrared photography to differentiate between the inks used.

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- END -